# Regional Stakeholder Consultation on Climate Services for the Third Pole Region

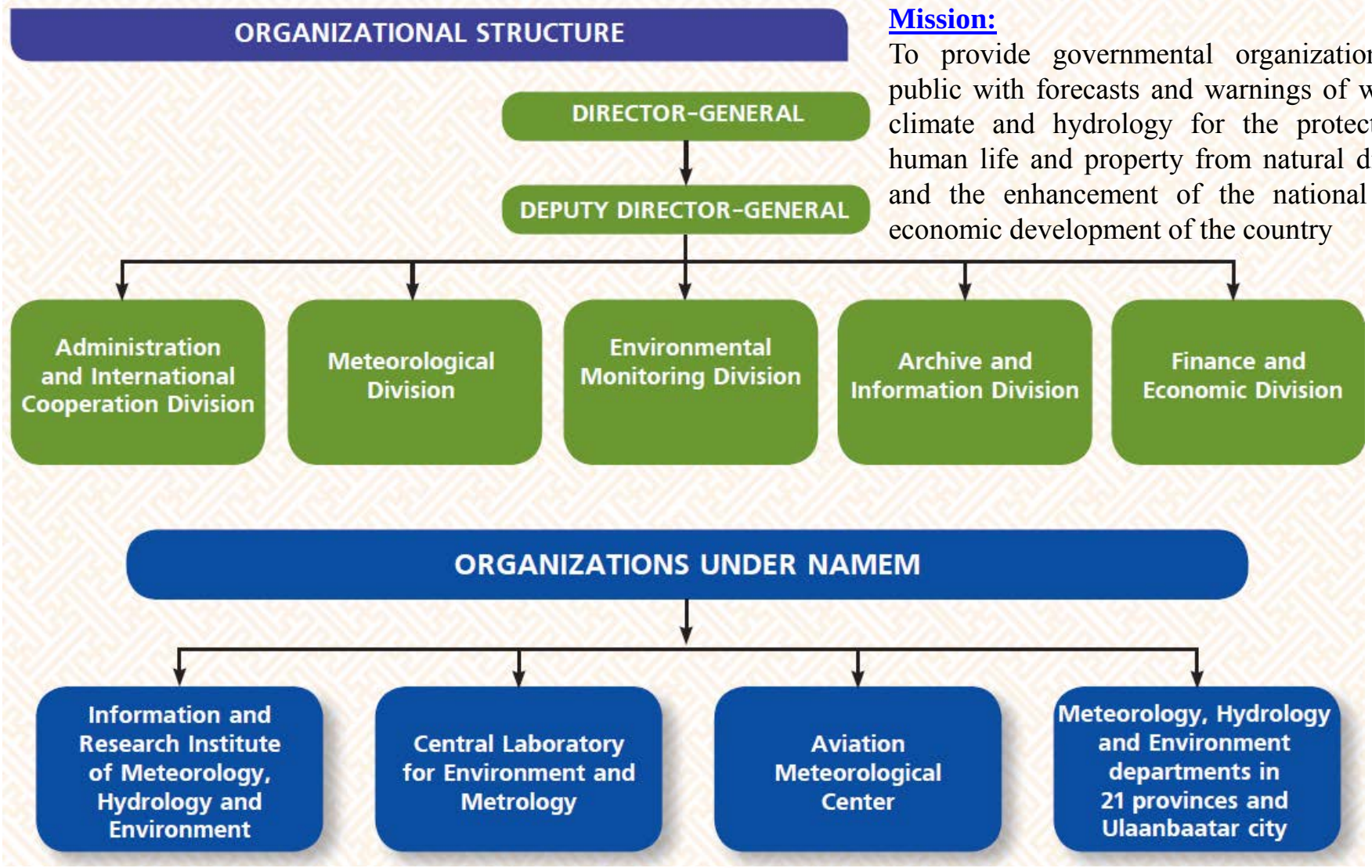
Jaipur, India

9-11 March 2016

## National Agency For Meteorology And Environmental Monitoring of Mongolia /NAMEM/

Name of country: Mongolia

# Capacities for provision of climate services (Institutional)




**Mission:**

To provide governmental organizations and public with forecasts and warnings of weather, climate and hydrology for the protection of human life and property from natural disasters and the enhancement of the national socio-economic development of the country

Name of country: Mongolia

# Capacities for provision of climate services (technical and human)

***Stations***

- Meteorological - 135
- Upper air - 7
- Solar radiation - 15
- Agro-meteorological - 2
- Animal husbandry station - 8
- Meteorological radar - 10
- Satellite data receiving station - 3
- Acid Deposition monitoring post – 2

***Posts***

- Agro-meteorological - 182
- Hydrological study - 150
- Radiation monitoring post - 35
- Air quality monitoring - 36
- Green house gas monitoring post - 1
- Environmental monitoring laboratory - 22
- Automatic station for Dust storm monitoring - 11
- Lake study station - 2
- Glacier study station - 2
- Desertification monitoring sites */over 1500 sites, regularly/* *623*

***Cray Supercomputer /XE6m/ - 1***

- Produced in Cray company, USA
- 768 processors
- Storage 200 terabyte
- 6.4 trillion
- 2000 times faster than personal computer

***Doppler radar station /RC-53C/ - 1***

- Established in 1999 from Japanese government
- Observes the cloud and precipitation in the radius of 480 km
- Specifically used for Aviation meteorological service and warning of natural disasters

***Upper-air sounding station-4***

- Produced in Modem company, France
- Since 2004
- Radiosondes M2K2, M-10
- Launch twice a day

***Human resource***

~1880 employees

Name of country: Mongolia

# Current status of provision of climate services to sectors and existing user interface mechanisms:

## AGROMETEOROLOGYCAL SERVICE

| MONITORING TYPES | SITE |
|---|---|
| **Pasture plants** /pasture growth stage, harvest, height, damage etc/ | 316 points |
| **Zoo meteorology** /sheep, goat, cow, etc./ | 8 posts |
| **Crops** /plant growth stage, harvest, height, damage etc./ | 39 points |
| **Pasture soil moisture** | 35 points |
| **Pasture grasshopper and pest rodent** /density, species and development stages/ | 316 posts and points |
| **Desertification monitoring** /pasture and soil quality/ | 1550 |

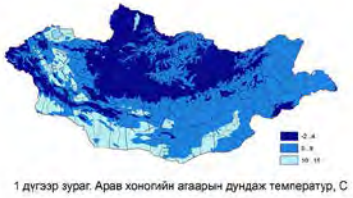
***Review***:

**Products**

Pasture condition

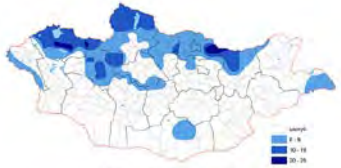
3 дугаар зураг. Бэлчээрийн ургамлын ургалтын байдал (2014 оны 5 дугаар сарын 10-ны байдлаар)

Mean temperature decade of May



1 дүгээр зураг. Арав хоногийн агаарын дундаж температур, С

Snow cover in last decade of March



3 дугаар зураг. Цасны зузаан, см (2014 оны 3 дугаар сарын 20-ны байдлаар)

***Foreacst:***

- Soil moisture forecast for planting period
- Soil thawing time forecast
- Potato crop forecast
- Wheat crop forecast

## HYDROLOGYCAL SERVICE

| MONITORING TYPES | SITE |
|---|---|
| **Hydrological gauging station** | 150 posts |
| **Underground water observation** | 38 crannies |
| **Lake research** | 3 lakes |
| **Glacier research** | 4 points |
| **Spring observation** | 15 springs |
| **Hydro biology observation** | 76 points |
| **Permafrost monitoring** | 60 points |

**Products**

- Decadal review on hydrological regime, ice phenomena and ice depth of rivers and lakes
- Short range flood forecasting and long range forecasting of monthly runoff, prediction of date of establishing of complete ice cover and melting
- Operational service on hydrological regime and data to the public

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## WEATHER FORECAST

**1. Short-range weather forecasts**
- 6 hours forecast
- 12 hours forecast
- 1 day forecast

**2. Medium-range weather forecasts**
- 5 days forecast
- 7 days forecast

**3. Long-range weather forecasts**
- Monthly weather forecast
- Seasonal outlooks

**4. Early warning for severe and hazardous**
weather and natural disasters

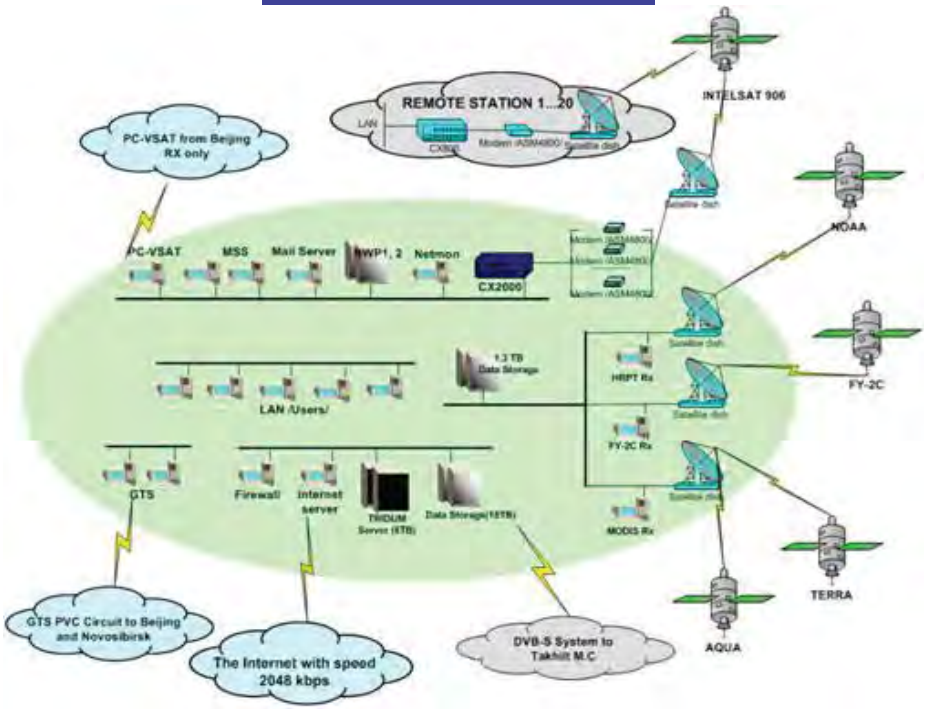
## AERONAUTICAL METEOROLOGY

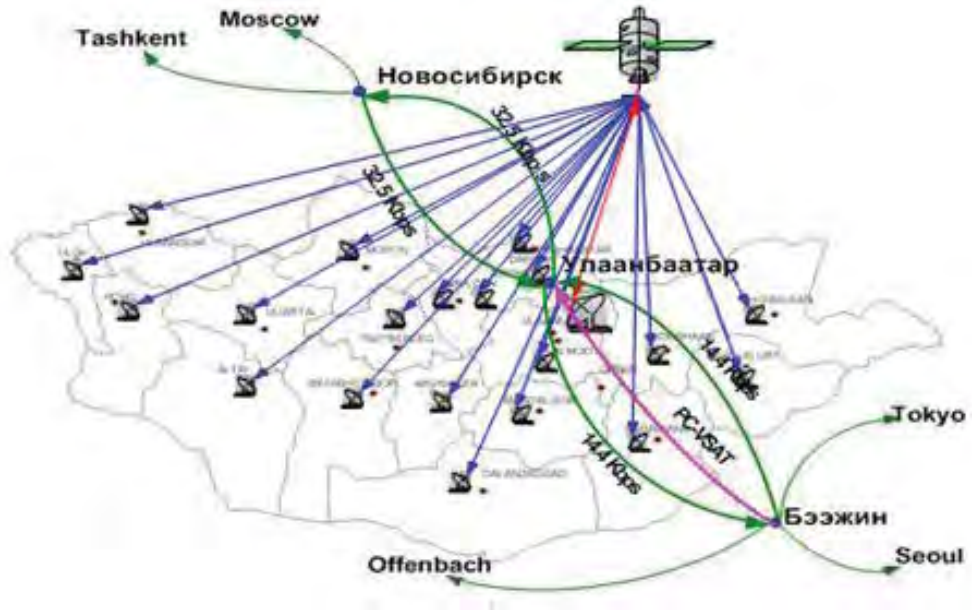
Aviation Meteorological Center produces real-time weather information on route and area forecasts in order to provide safety of each flight over the territory of Mongolia. It uses information and data from Research
and Information Institute of Meteorology, Hydrology and Environment, Centers and Regional Centers of Washington, Doppler Radar, Automatic Meteorological Observation Station, WAFS and AFTN.

## REMOTE SENSING

| PRODUCT | SATELLITE |
|---|---|
| Vegetation index | NOAA, FY, MODIS, NPP, METOP |
| Pasture plant biomass | |
| Snow cover | |
| Forest and step fire | |
| The area of frigidity and lakes | |
| Ground cover | |
| Drought monitoring | |
| Surface temperature | |

## TELECOMMUNICATION



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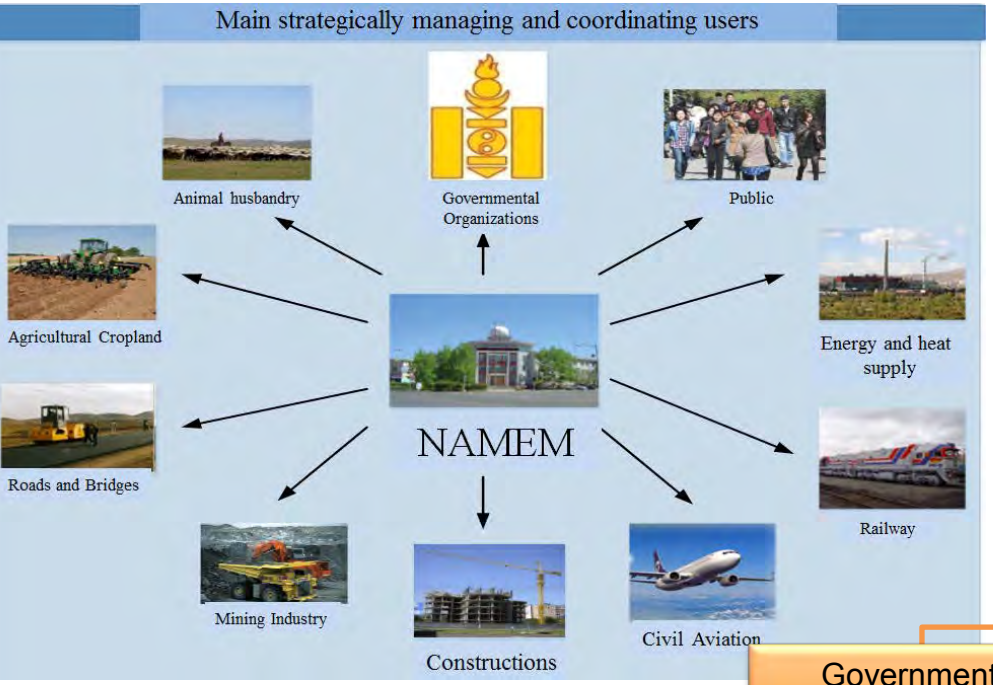
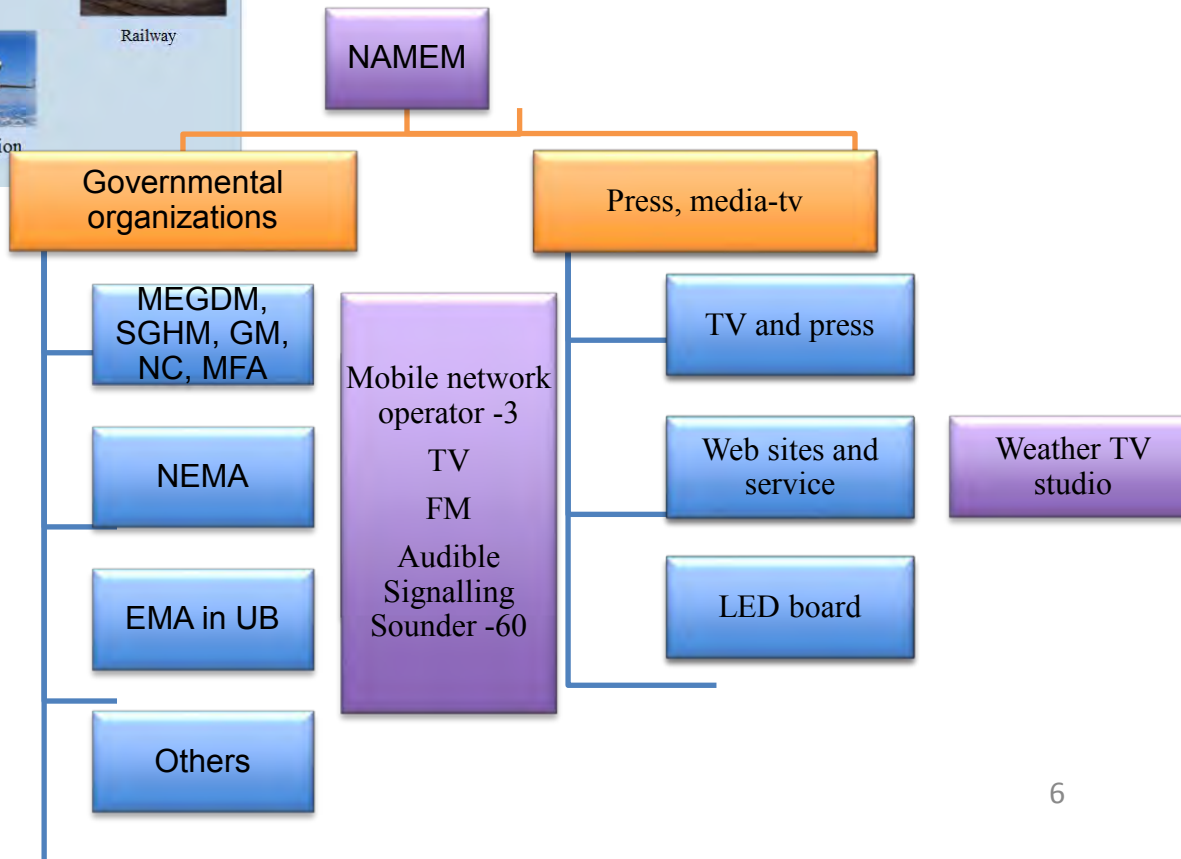
# Current status of provision of climate services to sectors and existing user interface mechanisms:



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# Gaps:

1. Improvement of Mongolian Operational Numerical Weather Prediction System

2. Complete interactive tools of weather and climate extreme events

3. Improve technology of climate analysis and monitoring systems

4. Forecasting harsh winter and summer heatwave using dynamical global models

5. Increase accuracy to 80% of long-range weather forecasts

GFCS
GLOBAL FRAMEWORK FOR CLIMATE SERVICES

Name of country: Mongolia

# Challenges:

1. Improve capability of Supercomputer (obtain new supercomputer ) for climate prediction and projection
2. Develop and adapt global and regional climate models for monthly and seasonal weather forecasts
3. Extension of AWS network
4. We are need specialists, experts who have the good knowledge of Math, Atmospheric physics and Computer Science

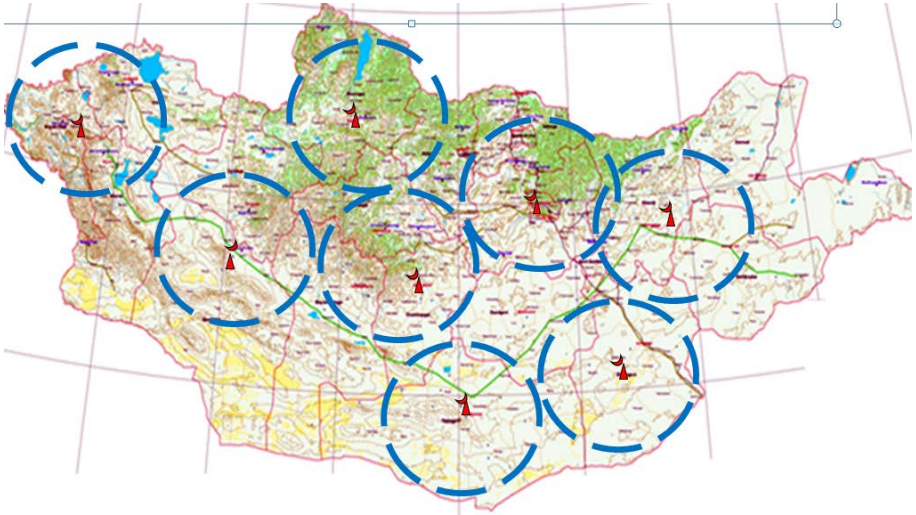
Name of country: Mongolia

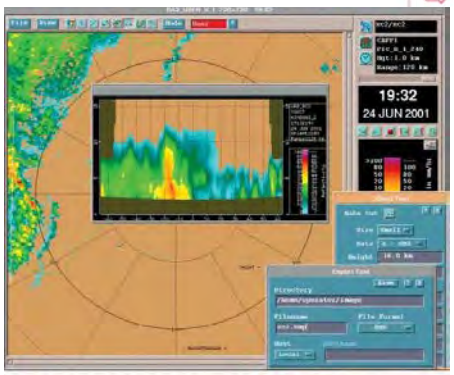
# Future perspectives for improved climate services:

- Improve accuracy to 90-95% of Medium-range weather forecasts.

- Establish three Doppler radar stations /RC-53C/ in the north part and four Doppler radar stations in the south and east parts of the country to improve Early Warning Systems to Weather Disaster Reduction.

*Future National Weather Network of Doppler Radar*






- Ulaanbaatar
- Uvs
- Khuvsgul
- Khentii
- Gobi-Altai
- Uvurkhangai
- Umnugobi
- Dornogobi

GFCS
GLOBAL FRAMEWORK FOR CLIMATE SERVICES

Name of country: Mongolia

# Future perspectives for improved climate services:

- Improvement of early warning systems to reduce weather-related disasters

- Increase accuracy to 80 % of long-range weather forecasts


# Thank you